

CLAIMS

What is claimed is:

- 1 1. A method to blend two images, the method comprising:
 - 2 loading a vector of keys into a vector register;
 - 3 converting the vector of keys into a first vector of blending factors for a first
 - 4 image and a second vector of blending factors for a second image
 - 5 using a plurality of look up tables in a vector look up unit; and
 - 6 computing an image attribute for a blended image using the blending factors.
- 1 2. A method as in claim 1 wherein the blending factors are one of:
 - 2 a) floating point numbers;
 - 3 b) fixed point numbers; and
 - 4 c) integers.
- 1 3. A method as in claim 1 wherein said converting comprises:
 - 2 generating a first vector of indices in a vector register by replicating a first
 - 3 subset of the vector of keys as a first subset of the first vector of
 - 4 indices for looking up first blending factors for the first image and
 - 5 replicating the first subset of the vector of keys as a second subset of
 - 6 the first vector of indices for looking up second blending factors for
 - 7 the second image; and

8 looking up simultaneously the first and second blending factors using the
9 first vector of indices in the vector look up unit.

1 4. A method as in claim 3 further comprising:
2 storing the first blending factors into the first vector of blending factors and
3 the second blending factors into the second vector of blending
4 factors.

1 5. A method as in claim 1 wherein said converting comprises:
2 generating a first vector of indices in a vector register, one key in the vector
3 of keys being replicated as a first plurality of indices in the first
4 vector of indices for looking up respectively a plurality of bit
5 segments of a first blending factor; and
6 looking up simultaneously a first vector of blending factors comprising the
7 first blending factor using the first vector of indices in the vector look
8 up unit.

1 6. A method to blend two images, the method comprising:
2 loading a first vector of keys into a vector register;
3 loading a second vector of keys into a vector register;
4 converting the first vector of keys into a first vector of blending factors for a
5 first image and the second vector of keys into a second vector of
6 blending factors for a second image using a plurality of look up tables

7 in a vector look up unit; and
8 computing an image attribute for a blended image using the blending factors.

1 7. A method as in claim 6 wherein the blending factors are one of:

2 a) floating point numbers;

3 b) fixed point numbers; and

4 c) integers.

1 8. A method as in claim 6 wherein said converting comprises:
2 generating a first vector of indices in a vector register by replicating a first
3 subset of the first vector of keys as a first subset of the first vector of
4 indices for looking up first blending factors for the first image and
5 replicating a first subset of the second vector of keys as a second
6 subset of the first vector of indices for looking up second blending
7 factors for the second image; and
8 looking up simultaneously the first and second blending factors using the
9 first vector of indices in the vector look up unit.

1 9. A method as in claim 8 further comprising:
2 storing the first blending factors into the first vector of blending factors and
3 the second blending factors into the second vector of blending
4 factors.

1 10. A method as in claim 6 wherein said converting comprises:
2 generating a first vector of indices in a vector register, one key in the first
3 vector of keys being replicated as a first plurality of indices in the
4 first vector of indices for looking up respectively a plurality of bit
5 segments of a first blending factor; and
6 looking up simultaneously a first vector of blending factors comprising the
7 first blending factor using the first vector of indices in the vector look
8 up unit.

1 11. A machine readable media containing executable computer program
2 instructions which when executed by a digital processing system cause said
3 system to perform a method to blend two images, the method comprising:
4 loading a vector of keys into a vector register;
5 converting the vector of keys into a first vector of blending factors for a first
6 image and a second vector of blending factors for a second image
7 using a plurality of look up tables in a vector look up unit; and
8 computing an image attribute for a blended image using the blending factors.

1 12. A media as in claim 11 wherein the blending factors are one of:
2 a) floating point numbers;
3 b) fixed point numbers; and
4 c) integers.

1 13. A media as in claim 11 wherein said converting comprises:
2 generating a first vector of indices in a vector register by replicating a first
3 subset of the vector of keys as a first subset of the first vector of
4 indices for looking up first blending factors for the first image and
5 replicating the first subset of the vector of keys as a second subset of
6 the first vector of indices for looking up second blending factors for
7 the second image; and
8 looking up simultaneously the first and second blending factors using the
9 first vector of indices in the vector look up unit.

1 14. A media as in claim 13 wherein the method further comprises:
2 storing the first blending factors into the first vector of blending factors and
3 the second blending factors into the second vector of blending
4 factors.

1 15. A media as in claim 11 wherein said converting comprises:
2 generating a first vector of indices in a vector register, one key in the vector
3 of keys being replicated as a first plurality of indices in the first
4 vector of indices for looking up respectively a plurality of bit
5 segments of a first blending factor; and
6 looking up simultaneously a first vector of blending factors comprising the
7 first blending factor using the first vector of indices in the vector look

8 up unit.

1 16. A machine readable media containing executable computer program
2 instructions which when executed by a digital processing system cause said
3 system to perform a method to blend two images, the method comprising:
4 loading a first vector of keys into a vector register;
5 loading a second vector of keys into a vector register;
6 converting the first vector of keys into a first vector of blending factors for a
7 first image and the second vector of keys into a second vector of
8 blending factors for a second image using a plurality of look up tables
9 in a vector look up unit; and
10 computing an image attribute for a blended image using the blending factors.

1 17. A media as in claim 16 wherein the blending factors are one of:
2 a) floating point numbers;
3 b) fixed point numbers; and
4 c) integers.

1 18. A media as in claim 16 wherein said converting comprises:
2 generating a first vector of indices in a vector register by replicating a first
3 subset of the first vector of keys as a first subset of the first vector of
4 indices for looking up first blending factors for the first image and
5 replicating a first subset of the second vector of keys as a second

6 subset of the first vector of indices for looking up second blending
7 factors for the second image; and
8 looking up simultaneously the first and second blending factors using the
9 first vector of indices in the vector $\mathbf{b}_1 = \mathbf{b}_1^{\text{first}}$

1 19. A media as in claim 18 wherein the method further comprises:
2 storing the first blending factors into the first vector of blending factors and
3 the second blending factors into the second vector of blending
4 factors

1 20. A media as in claim 16 wherein said converting comprises:
2 generating a first vector of indices in a vector register, one key in the first
3 vector of keys being replicated as a first plurality of indices in the
4 first vector of indices for looking up respectively a plurality of bit
5 segments of a first blending factor; and
6 looking up simultaneously a first vector of blending factors comprising the
7 first blending factor using the first vector of indices in the vector look
8 up unit.

1 21. A processing system to blend two images, the system comprising:
2 means for loading a vector of keys into a vector register;
3 means for converting the vector of keys into a first vector of blending factors
4 for a first image and a second vector of blending factors for a second

5 image using a plurality of look up tables in a vector look up unit; and
6 means for computing an image attribute for a blended image using the
7 blending factors.

1 22. A processing system as in claim 21 wherein the blending factors are one of:
2 a) floating point numbers;
3 b) fixed point numbers; and
4 c) integers.

1 23. A processing system as in claim 21 wherein said means for converting
2 comprises:
3 means for generating a first vector of indices in a vector register by
4 replicating a first subset of the vector of keys as a first subset of the
5 first vector of indices for looking up first blending factors for the first
6 image and replicating the first subset of the vector of keys as a second
7 subset of the first vector of indices for looking up second blending
8 factors for the second image; and
9 means for looking up simultaneously the first and second blending factors
0 using the first vector of indices in the vector look up unit.

1 24. A processing system as in claim 23 further comprising:
2 means for storing the first blending factors into the first vector of blending
3 factors and the second blending factors into the second vector of

4 blending factors.

1 25. A processing system as in claim 21 wherein said means for converting
2 comprises:

3 means for generating a first vector of indices in a vector register, one key in
4 the vector of keys being replicated as a first plurality of indices in the
5 first vector of indices for looking up respectively a plurality of bit
6 segments of a first blending factor; and

7 means for looking up simultaneously a first vector of blending factors
8 comprising the first blending factor using the first vector of indices in
9 the vector look up unit.

1 26. A processing system to blend two images, the system comprising:

2 means for loading a first vector of keys into a vector register;
3 means for loading a second vector of keys into a vector register;
4 means for converting the first vector of keys into a first vector of blending
5 factors for a first image and the second vector of keys into a second
6 vector of blending factors for a second image using a plurality of look
7 up tables in a vector look up unit; and

8 means for computing an image attribute for a blended image using the
9 blending factors.

1 27. A processing system as in claim 26 wherein the blending factors are one of:

- 2 a) floating point numbers;
- 3 b) fixed point numbers; and
- 4 c) integers.

1 28. A processing system as in claim 26 wherein said means for converting
2 comprises:

3 means for generating a first vector of indices in a vector register by
4 replicating a first subset of the first vector of keys as a first subset of
5 the first vector of indices for looking up first blending factors for the
6 first image and replicating a first subset of the second vector of keys
7 as a second subset of the first vector of indices for looking up second
8 blending factors for the second image; and
9 means for looking up simultaneously the first and second blending factors
10 using the first vector of indices in the vector look up unit.

1 29. A processing system as in claim 28 further comprising:

2 means for storing the first blending factors into the first vector of blending
3 factors and the second blending factors into the second vector of
4 blending factors.

1 30. A processing system as in claim 26 wherein said means for converting
2 comprises:

3 means for generating a first vector of indices in a vector register, one key in

the first vector of keys being replicated as a first plurality of indices in the first vector of indices for looking up respectively a plurality of bit segments of a first blending factor; and means for looking up simultaneously a first vector of blending factors comprising the first blending factor using the first vector of indices in the vector look up unit.

1 31. A processing system to blend two images, the system comprising:
2 a vector register file comprising a plurality of vector registers;
3 a vector processing unit coupled to the vector register file, the vector
4 processing unit comprising a vector look up unit adapted to look up a
5 vector of data items simultaneously, the vector processing unit:
6 loading a vector of keys into a vector register in the vector register file;
7 converting the vector of keys into a first vector of blending factors for a first
8 image and a second vector of blending factors for a second image
9 using a plurality of look up tables in the vector look up unit; and
10 computing an image attribute for a blended image using the blending factors.

1 32. A processing system as in claim 31 wherein the blending factors are one of:
2 a) floating point numbers;
3 b) fixed point numbers; and
4 c) integers.

1 33. A processing system as in claim 31 wherein to convert the vector of keys the
2 vector processing unit:
3 generates a first vector of indices in a vector register in the vector register
4 file by replicating a first subset of the vector of keys as a first subset
5 of the first vector of indices for looking up first blending factors for
6 the first image and replicating the first subset of the vector of keys as
7 a second subset of the first vector of indices for looking up second
8 blending factors for the second image; and
9 looks up simultaneously the first and second blending factors using the first
10 vector of indices in the vector look up unit.

1 34. A processing system as in claim 33 wherein the vector processing unit stores
2 the first blending factors into the first vector of blending factors in a first
3 vector register in the vector register file and the second blending factors into
4 the second vector of blending factors in a second vector register in the vector
5 register file.

1 35. A processing system as in claim 31 wherein to convert the vector of keys the
2 vector processing unit:
3 generates a first vector of indices in a vector register in the vector register
4 file, one key in the vector of keys being replicated as a first plurality
5 of indices in the first vector of indices for looking up respectively a

1 36. A processing system to blend two images, the system comprising:
2 a vector register file comprising a plurality of vector registers;
3 a vector processing unit coupled to the vector register file, the vector
4 processing unit comprising a vector look up unit adapted to look up a
5 vector of data items simultaneously, the vector processing unit:
6 loading a first vector of keys into a vector register in the vector register file;
7 loading a second vector of keys into a vector register in the vector register
8 file;
9 converting the first vector of keys into a first vector of blending factors for a
10 first image and the second vector of keys into a second vector of
11 blending factors for a second image using a plurality of look up tables
12 in the vector look up unit; and
13 computing an image attribute for a blended image using the blending factors.

1 37. A processing system as in claim 36 wherein the blending factors are one of:
2 a) floating point numbers;
3 b) fixed point numbers; and
4 c) integers.

1 38. A processing system as in claim 36 to convert the vector of keys the vector
2 processing unit:
3 generates a first vector of indices in a vector register by replicating a first
4 subset of the first vector of keys as a first subset of the first vector of
5 indices for looking up first blending factors for the first image and
6 replicating a first subset of the second vector of keys as a second
7 subset of the first vector of indices for looking up second blending
8 factors for the second image; and
9 looks up simultaneously the first and second blending factors using the first
10 vector of indices in the vector look up unit.

1 39. A processing system as in claim 38 wherein the vector processing unit stores
2 the first blending factors into the first vector of blending factors in a first
3 vector register in the vector register file and the second blending factors into
4 the second vector of blending factors in a second vector register in the vector
5 register file.

1 40. A processing system as in claim 36 wherein to convert the vector of keys the
2 vector processing unit:
3 generates a first vector of indices in a vector register in the vector register
4 file, one key in the first vector of keys being replicated as a first
5 plurality of indices in the first vector of indices for looking up
6 respectively a plurality of bit segments of a first blending factor; and
7 looks up simultaneously a first vector of blending factors comprising the first
8 blending factor using the first vector of indices in the vector look up
9 unit.